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twenty or more individuals. They are the house pets of all the inhabitants. They eat crumbs from the kitchen steps, alight on the window frames, and will even enter the houses if a window is left open. The children at many a lonely section house on the railroad beguile the long winter days with feeding these pets. At Glen Alpine I had good opportunity to observe them, for there the watchman had a tray filled with crumbs, nailed to the window ledge. At this the chickadees would be feeding every hour of the day, sometimes five or six at a time. They were continually uttering their "chick-a-dee, dee, dee." A bit of salt pork hung up by a string furnished an especial relish. Some were clinging to it head downwards, most of the time. They were omnivorous eaters, but seemed to like best soaked cracker crumbs. To this feeding place at Glen Alpine they came from at least half a mile distant. I have watched them fly from tree to tree making directly for the kitchen window. In the woods the chickadees appear to feed upon insect life, but what I do not know.

Alta, California.

Explanatory

BY LYMAN BELDING

WHEN the Land Birds of the Pacific District was published I excluded considerable matter that was intended for it. This consisted of notes on the food of birds, so-called correlative phenomena, miscellaneous matter contributed by myself and Signal Service reports I had copied at San Diego, in the Sacrameeto Valley, and at the summit of the Central Pacific R. R. I stated on page 2 that the data on food was meager, and therefore unsatisfactory, and I might have added, somewhat contradictory.

The so-called correlative phenomena contained some very interesting items, but was used sparingly because it related distantly, if at all, to the coming of the birds. The Signal Service reports had apparently no closer connection with migration than the correlative phenomena. Possibly some other person might have considered the excluded matter as having more value than I attached to it.

I have been asked why I cited Fort Yuma and Fort Mojave records. It was because I knew that old Fort Yuma was on the west bank of the Colorado. Fort Mojave was on the east bank but I knew that Dr. Cooper had collected on both sides of the river. I also knew that the early ornithologists were not careful to name the precise locality where they got their specimens. I had seen *Ampelis garrulus* in Plumas County, July, 1885. Another of Dr. Cooper's Fort Mojave species, *Toxostoma crissale*, I had taken on the west side of the Colorado River, latitude about thirty degrees, in May of the same year.

At several stations there was more than one observer, and this was responsible for my unusual method of giving credit.

I placed the manuscript in Mr. Bryant's hands, and expected him to attend to its publication. He did so partly, and during his absence from the Academy of Sciences I was requested to visit San Francisco and finish reading the proofs. I discovered that in the effort to abbreviate, a few errors had crept into the volume, some of which I corrected and others I overlooked, while it was too late to correct a

few others. I may refer to them in the future, though they are not very important.

I did a great amount of work of which its pages bear no evidence. I spent most of the summer and autumn of 1885 in studying the food habits of the birds in orchards, vineyards, grain fields, pastures, in valley and mountain. I had previously been somewhat familiar with them but examination of bird stomachs gave me some surprises. I found wheat in stomachs of birds that I had not suspected of eating it, including *Melanerpes f. bairdi* and *Asyndesmus torquatus*. I discovered that the former stores acorns and eats them without reference to any worm they may contain, thus exploding the venerable theory of its selecting acorns that would later on contain worms and that the anticipated grub was the sole desideratum. This bird is very fond of mulberries; nevertheless it is quite harmless. I had often seen *Scolecophagus cyanocephalus*, *Sturnella neglecta* and *Aphelocoma californica* probe the ground for the kernel of wheat at the root of the young plant, frequently destroying it, had shot them and found their stomachs full of soft wheat and nothing else except a little soil. But I had seen these and nearly all of the birds feeding principally upon locusts which were very destructive throughout a large portion of California in 1885 and I knew that a just verdict could not be rendered for or against many species until an immense amount of testimony was taken in all sorts of localities at all times of the year. My first impulse was to publish notes on food of hawks, owls, and game birds, of which I had positive opinions. I was aware of the great usefulness of the hawks and owls which remain in California during summer—especially the red tailed hawk and burrowing owl.

MIGRATION. The simple fact is that the north coming migrants arrive in California, at least, about the same time every spring, without regard to temperature or state of vegetation, though the latter is about a month later some seasons than others. My observations at San Diego during the migratory periods of 1884 and 1885 led me to think differently, but long continued observations in central California have convinced me of the correctness of the above assertion. There are no temperatures so low as to check the spring migrants west of the Sierra Nevada.

The Lower Sonoran life zone extends north of the 40th parallel in the interior of California. Oranges ripen earlier at lat. 39° than at Los Angeles, lat. 34°.

It is said of Thoreau that upon seeing a certain flower he remarked that it was time for a certain bird to arrive from the south. It would be impossible to make accurate predictions of that sort in California, and quite impossible for birds to make their spring arrival accord with flowering of the plants. A few examples will demonstrate this. Mr. Proud reported almond blossoms at Chico, February 1, 1885; Mr. Palmer reported them at Berkeley, February 6, 1895. Berkeley is nearly three degrees of latitude south of Chico. March 10, 1886, vegetation was about ten days earlier at Gridley than at Stockton, Livermore, Niles and Hayward, all of which are more than three degrees south of Gridley. Here I should say that plants are not always earlier at Gridley than at Stockton. At Gridley leaves on deciduous oaks were about two inches long February 22, 1886. They were just perceptible at Stockton February 28, 1900. The oaks were slightly tinged with green at Stockton April 1, 1903. Some of the birds arrived at Stockton earlier the cold backward spring of 1903 than in the mild early one of 1900. The martin (*Progne s. hesperia*) came in cool, stormy weather March 7, 1903, *Empidonax traillii*, *Contopus richardsoni*, *Icteria v. longicauda*, *Zamelodia melanocephala* and others came between April 25 and 29 against a strong cool north wind, the two last named in moderate force. Many grosbeaks were singing the 25th.

During the remarkable cold winter of 1902-3 the lowest temperature at:

Poway	alt. ^a 460 ft., lat. 33°, was 27	Sacramento	alt. 35 ft., lat. 39°, was 29
Riverside	" 851 " " 34 " 24	Auburn	" 1310 " " 39 " 26
Fresno	" 293 " " 37 " 25	Marysville	" 67 " " 39+ " 27
Stockton	" 23 " " 38 " 25	Red Bluff	" 307 " " 40+ " 27
Valley Springs	" 678 " " 38 " 26		

It will be seen that a considerable increase in latitude and altitude has but little influence in modifying temperature in the interior of California.

I have known spring to be backward in the valley and early in the mountains. At Stockton in the spring of 1897 vegetation was very much behind average seasons and equally late at Murphy, altitude 2300 feet. Supposing it would be correspondingly late at Big Trees, altitude 4700 feet, I delayed going there until May 28, when to my surprise I found the plants about two weeks earlier than I had ever seen them in any of my numerous visits to the place. The locust and the purple lilac had blossomed about the middle of May, while June 15 is about the average time at this locality.

Dr. J. W. Williams reported spring a month earlier than usual at Fort Walla Walla (latitude 46°, altitude 200 feet) in 1885. Mr. John Fannin, at Burrard Inlet, B. C., latitude about 50°, reported the gardens "gorgeous with apple blossoms April 4, 1885. The only remarkable feature of the spring is its mildness which has continued since the last week in February. The only remarkable arrivals are *Hyllocichla ustulata* and *Dendroica auduboni* which came nearly a month earlier than last season. Our winter residents have, however, started north at about their usual time with one or two exceptions." Of 1884 he said "the weather from April 1 was one continuous stretch of fine weather and yet this circumstance does not appear to have caused the arrival of migrants any earlier than former years; on the contrary in some cases they have been later." I call attention to what Mr. Fannin says of the migrants and also the early flowering of apples. Mr. T. S. Palmer reported apples in full bloom at Berkeley March 31, 1885, a difference of only five days.

The data on flowering of plants though interesting was of little value for purposes of comparison. At Walla Walla Dr. Williams gave dates of flowering of many plants but only one of his species was mentioned and that by a single observer.

Stockton, Cal.

Nevada Notes

BY WILSON C. HANNA

(Concluded)

Asio wilsonianus. Long-eared Owl. One pair was found nesting in a thorn bush near Stone House May 10.

Speotyto c. hypogæa. Burrowing Owl. Not uncommon.

Ceryle alcyon. Belted Kingfisher. Not uncommon.

Colaptes c. collaris. Red-shafted Flicker. A few observed.

^a The altitudes here given are approximately correct.